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**EXHIBIT  
A**

Confidential Amended Expert Report of  
Dr. Boris M. Richard

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UNITED STATES DISTRICT COURT  
DISTRICT OF NEW HAMPSHIRE

The Securities and Exchange Commission  
v.  
LBRY, Inc.

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**I. SUMMARY OF REVISIONS AND AMENDMENTS**

1. The purpose of this Amended Report is to amend certain quantitative analyses contained in my Original Report submitted on February 4, 2022, in light of certain questions asked during my deposition, and new information and data of which I was unaware and did not have access. I also submit this Amended Report to make certain corrections to some quantitative results and related exhibits.
2. Importantly, none of the amendments contained in this Amended Report change my original expert conclusions in this matter: LBC tokens were used by its holders primarily as a native currency on the LBRY platform to consume digital services, as opposed to purchasing and holding LBC to trade and speculate for investment gains.

**II. REVISED AND EXPANDED REGRESSION RESULTS DO NOT CHANGE MY ORIGINAL EXPERT OPINIONS**

3. In my original report I performed a regression analysis and regression-based event study around LBRY's platform-related announcements and concluded based on these analyses that (1) there was no empirical evidence to suggest that LBRY Team announcements ("LBRY Team Announcements") had a statistically significant impact on the LBC token price (Section E.1, Exhibit 11); (2) there was statistically significant evidence that multiple LBRY platform utility-related announcements ("LBRY Utility Announcements") affected the price behavior of the LBC token (Section E.3, Exhibit 13); and (3) the LBC price was driven in a statistically significant way by the general cryptocurrency market as proxied by the price of Bitcoin (Section E.4, Exhibit 14).

4. Following a widely accepted statistical procedure, I estimated LBC abnormal returns around the LBRY Team and Utility announcement dates after adjusting for the Bitcoin price change (used as the proxy for the overall cryptocurrency market), and then established whether such abnormal returns were statistically significant at a 5% significance level.
5. In my analysis of the statistical significance of the LBRY Utility and LBRY Team Announcements as the driving factor behind the LBC price, I relied upon LBRY and BTC daily closing prices sourced from CryptoCompare. In my regression model, I calculated the returns of LBRY and BTC as three-day rolling price returns from day (t-1) through day (t+1), with day (t0) being the date of the announcement.
6. I then reported my regression-based results for the estimation (sample) windows of 30 and 90 calendar days. Observations corresponding to prior historical LBRY announcements were removed from each of the two sample windows.
7. Observations for calendar dates preceding and following a historical announcement date that fell into the estimation window were included in the sample. However, since the return event window for a historical announcement date is computed over three days, the calendar dates preceding and following a historical announcement date should also have been removed from the sample.
8. To correct for the potential bias in estimated regression coefficients due to such inclusion—an issue that was raised at my deposition—in my amended analysis, I also remove the observations preceding and following historical LBRY announcement dates within the estimation sample where applicable.

9. After applying this amendment to the sample observations, the regression results remain consistent with and re-affirm my original findings.
10. Specifically, as Amended Exhibits 11 and 13 demonstrate, the dates on which LBC abnormal price returns are statistically significant under the amended analysis remain the same as in my original analysis. Specifically, March 3, 2020 is still the only date on which a LBRY Team Announcement recorded a statistically significant abnormal LBC price return, as shown in Exhibit 11.<sup>1</sup> Likewise, the same nine LBRY Utility Announcement dates in Exhibit 13 are associated with statistically significant abnormal LBC price returns as reported in my original report.<sup>2</sup>
11. Likewise, Amended Exhibit 14 reaffirms my original opinion that even under my corrected regression analysis, the general cryptocurrency market, as proxied by Bitcoin, is a statistically significant factor in determining the LBC token price behavior. As shown in Exhibit 14, the LBC price return sensitivities with respect to Bitcoin price returns are calculated between 0.47 and 1.59 for the period 2017 through 2021, thus indicating a positive relationship between Bitcoin and LBC.
12. In this Amended Report, I also report expanded results of my regression analysis to include the regression results when using a 180-day estimation period, which was another issue raised

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<sup>1</sup> It is important to note that while I conservatively categorize the March 3, 2020 announcement of incentives for Steem blockchain users to join LBRY platform as “LBRY Team Announcement” due to the lack of utility feature improvements of the LBRY data sharing platform announced on that particular date, this announcement plausibly corroborates my original opinion that LBC token price performance is directly related to the LBRY platform usage (*i.e.*, on-chain transaction volume). Indeed, the potential inflow of Steem network users into the LBRY platform could be reasonably expected to boost the user base and the network activity within the LBRY ecosystem.

<sup>2</sup> Exhibit 13 also corrects an error in my original report by which the abnormal price return of the LBC token on August 15, 2019 was not reported as statistically significant, while in fact it was statistically significant when using the 30-day estimation period.

at my deposition. Amended Exhibits 11, 13 and 14 all show that my findings concerning the relationship between the LBC token price and two categories of LBRY announcements, as well as the BTC price, remain the same where a longer estimation period is used in the regression analysis.

13. Lastly, it is important to note that LBRY Utility Announcements did not always affect the LBC token price in a positive direction. For example, the August 15, 2019 announcement of the Franklin update to the LBRY desktop browser coincided with the occurrence of a security-related hard fork of the LBRY blockchain on the night of August 16, 2019.<sup>3</sup> The blockchain security concerns and a loss of certain mining nodes, even though quickly resolved, overwhelmed the news of the browser update, resulting in a significant drop in LBC price.

14. In a similar vein, the LBRY Utility Announcement concerning the launch of the Odysee application on October 21, 2020 resulted in a statistically significant abnormal return on the LBC price in a negative direction. My review of publicly available information shows that the early release of the Odysee application did not get a positive reception from a large portion of LBRY users whose comments often indicated displeasure, confusion, and complaints about the multiplicity of competing applications and limited initial functionality of Odysee compared to LBRY desktop browser.<sup>4</sup>

15. In other words, my amended regression results confirm the existence of statistically significant evidence that the LBC token price was sensitive to important changes, both

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<sup>3</sup> See <https://lbry.com/news/lbry-blockchain-update>

<sup>4</sup> See for example, user comments on <https://odysee.com/@lbry:3f/sayhitoodysee:9>, <https://odysee.com/@lbry:3f/odyseewhatandwhy:9?&sunset=lbrytv>, or [https://www.reddit.com/r/lbry/comments/j81kow/what\\_is\\_odysee\\_why\\_did\\_we\\_make\\_it/](https://www.reddit.com/r/lbry/comments/j81kow/what_is_odysee_why_did_we_make_it/).

positive and negative, in the LBRY platform features and usability, as conveyed by the announcements, and the associated on-chain user activity.

**III. AMENDED CALCULATIONS OF LBRY ON-CHAIN TRANSACTION VOLUME AFFIRM THAT THE LBC TOKEN WAS USED PRIMARILY AS A NATIVE CURRENCY ON THE LBRY PLATFORM, NOT FOR TRADING AND SPECULATIVE GAINS**

16. In my original report, based on a comparison of LBRY on-chain transaction activity versus LBC trading activity on centralized cryptocurrency exchanges, I arrived at the conclusion that LBC token holders used this token primarily as a native currency on the LBRY platform to publish, consume and share digital content, and not as an investment asset held and sold for speculative gains.<sup>5</sup> In order to capture the true economic activity of LBRY users, I removed from the on-chain transaction volume all of the on-chain transactions associated with LBRY-affiliated addresses identified at the time of my analysis.<sup>6</sup> Such excluded transactions related to LBRY sales of LBC on the secondary market, distributions of LBC to employees, bounty and other payments to third party developers, as well as other kinds of operational, community-related and strategic partnerships-related distributions of LBC tokens.

17. As explained below, I have amended this analysis in two ways. Neither change alters my original conclusion that a majority of LBRY users utilized the LBC token as a means of consuming digital services on the LBRY network as opposed to as an investment instrument to obtain speculative gains in the secondary trading market.

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<sup>5</sup> See Paragraph 14 of the Original Report.

<sup>6</sup> See Section V.C.5 of the Original Report for the details of such analysis.

18. First, subsequent to the submission of my original report, I was provided with an additional 2,508 cryptocurrency addresses affiliated with LBRY. These addresses were not initially provided to me because LBRY lacked the necessary resources and personnel to complete the complicated and time-consuming task of tracking each address by the submission date of my original report. All on-chain transactions associated with these additional addresses were removed from the analysis.
19. Second, my amended analysis addresses a particular issue with the measurement of on-chain transaction volume which is related to the way in which Proof-of-Work blockchains, like Bitcoin or LBRY, execute token transfers between cryptographic wallets and keep track of wallet balances. Specifically, such blockchains utilize a so-called “Unspent Transaction Output” (UTXO) algorithm, by which the present balance of a wallet is the sum of all prior unspent inflows of cryptocurrency into the wallet.
20. Bitcoin-style wallet transactions sometimes effectively operate as “cash transactions” by sending out a wallet’s entire balance but then receiving back as “change” the amount exceeding the amount intended to be received by the receiving wallet. For example, if a LBRY wallet contained only one address consisting of 100 LBC but the owner of the wallet wanted to pay 20 LBC as a tip to a creator, it would send out one 100 LBC input and create two outputs--one for 20 LBC to the creator’s wallet and another for 80 LBC (change), which would come back to the sending wallet as its new updated balance, either into the same sending address, or into a newly created address in the same wallet which is known as a “change address.” Although the net amount of this transaction is 20 LBC, because of the UTXO algorithm, the amount of the transaction would be recorded on the blockchain as 100 LBC. This can be thought of in the same way as a customer paying for a \$3 item with a \$10



bill—the customer hands the cashier the \$10 bill and the cashier hands \$7 in change back to the customer. Over time, as the wallet engages in more transactions and receives more change outputs, the wallet balance will consist of multiple amounts of cryptocurrency in multiple change addresses in the same way that, in the context of cash transactions, one might end up with a mix of small bills and coins after starting with a \$100 bill and making several small cash purchases.

21. In theory, such transaction algorithms could inflate the true transaction volume on a blockchain because the volume is accounted for by the larger balance being sent out and not by the amount being intended for the recipient (for example, the 100 LBC transaction recorded in my hypothetical in the prior paragraph).
22. This potential inflation bias, however, is ultimately mitigated by the fact that UTXO blockchains and wallets, like Bitcoin or LBRY, have optimization algorithms by which transactions are executed in a way that minimizes the amount of change. After a wallet engages in a number of transactions, it will consist of more change addresses with inputs of varying sizes. In the cash analogy, to make a payment, such wallets will accumulate tokens from smaller change addresses to pay with as close to “exact change” as possible. For example, if a wallet has a 70 LBC balance consisting of change balances of 50 LBC, 10 LBC, 5 LBC, and 5 LBC, and the owner of the wallet wishes to tip another user 20 LBC, the optimization algorithm will send the recipient the inputs of 10 LBC, 5 LBC, and 5 LBC, and no new change address would be generated in the sending wallet. In this example, the total transaction volume would be recorded as 20 LBC, whereas in the example in paragraph 20, the total transaction volume was recorded as 100 LBC (20 LBC for the recipient and a change output of 80 LBC), even though the “tip” in both hypotheticals was

20 LBC. There is therefore a higher likelihood that wallets with large balances and less transaction history will cause inflated transaction sizes to be recorded on the blockchain, because there are fewer change addresses with balances that can be used to execute small transactions. In contrast, wallets that have engaged in multiple transactions and have many change addresses with balances of varying sizes, or wallets with lower overall balances, are less likely to inflate transaction volumes.

23. My original analysis removed all on-chain transactions related to the LBRY-affiliated addresses identified at that time in order to exclude LBRY's activity from my calculation of on-chain user activity. LBRY wallets have the largest LBC balances, and they are therefore also more likely to inflate true on-chain economic activity because they have fewer small-balance change addresses, so that the large transaction input discussed above would likely be recorded on the blockchain, rather than the net amount being sent.<sup>7</sup> Therefore, removing the LBRY addresses also mitigated the effect of large transactions potentially inflating transaction volume on the LBRY blockchain. Removing on-chain transactions of the additional 2,508 LBRY-affiliated addresses likely even further diminishes the potential inflation of LBRY on-chain economic activity.

24. As an additional step in this Amended Report, I also remove the transactions associated with the known wallets for entities that received LBC tokens from LBRY-affiliated addresses related to its Operational and Institutional funds and which were LBRY's partners for purposes of trading and liquidity provision (for example, MoonPay and Altonomy), or

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<sup>7</sup> For example, LBRY wallets/addresses associated with Operational, Institutional and Community funds contained between 100MM and 200MM LBC initially.

community and strategic development, such as the LBRY Foundation and Anti-Media.<sup>8</sup> Such wallets also had large initial balances of LBC tokens and their transactional history removal likely reduced further the potential issue of inflation bias in the estimation of the LBRY on-chain economic activity.

25. The results of the removal of these two additional categories of transactions are depicted in Exhibit 8A. Even with these large transactions removed, the LBRY on-chain activity is still substantially (1.91 times) higher than the secondary market trading activity in the LBC token between 2016 and 2021.

26. After removing the on-chain transactions of LBRY-affiliated addresses and LBRY's partners as discussed in Paragraph 25 above, I then took an even further step to reduce potential inflation bias by identifying "spike dates" (i.e., dates when the average on-chain transaction size was more than three times larger than the long-term average transaction size between 2016 and 2021) and removing all transactions on those dates that were more than three times the average long-term transaction size. This approach is conservative because in such instances I remove entire transactions from the on-chain volume even though these transactions add to the true volume in the amounts of LBC tokens actually received by the intended recipients.

27. The Amended Exhibits 5A-B, 6, and 7A-7B reflect the updated LBRY on-chain transaction volume analysis with the removals of the additional transactions identified in Paragraphs 25 and 26.

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<sup>8</sup> In all I removed transactional history of 7 addresses in this category. See <https://lbry.com/credit-reports>.

28. Amended Exhibits 8B and 9 report an updated on-chain activity/off-chain activity ratio for the LBC token with the same conservative on-chain transaction removals specified in Paragraph 26. The analysis underlying Exhibits 8B and 9 also shows that the average size of LBRY on-chain transactions during the period 2016 through 2021 was 668 tokens.
29. Importantly, the revised on-chain/off-chain ratio for LBC of 1.38, as depicted in Exhibit 8B, while lower than the originally reported ratio, is still considerably above 1.0. Thus, my amended analysis confirms my original finding that the on-chain activity in LBC substantially exceeded the secondary market trading activity in the token during the 2016-2021 period. In other words, the conservative amended analysis continues to indicate that the LBC token was used by its holders primarily as a native currency on the LBRY platform to consume digital services, and not for trading and speculative investment gains.<sup>9 10</sup>

#### **IV. OTHER MINOR CORRECTIONS AND AMENDMENTS**

30. The Amended Exhibit 1A corrects the typo in the last reported date from January 1, 2022, to January 2, 2022.
31. Amended Exhibits 1B and 1C remove red vertical lines as inapplicable to my analysis of the development of LBRY Android, LBRY Spee.ch and LBRY.tv applications.

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<sup>9</sup> If one were to relax the assumption and allow for on-chain transactions with sizes of up to five times larger than the long-term transaction size average, the on-chain/off-chain ratio for LBC rises to 1.46.

<sup>10</sup> While the amended on-chain/off-chain ratio for LBC of 1.38 is now right in line with those ratios for BTC and ETH, this is no longer a fair comparison: the ratios are likely to be lower for both BTC and ETH if an inflation in on-chain transaction volume were to be removed for those tokens, as I did in my amended analysis for LBC. BTC is subject to the same inflation bias because it is a UTXO cryptocurrency, and ETH on-chain volumes would need to be adjusted downwards to remove spam transactions, i.e., users moving funds back and forth between their own addresses.

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32. Amended Exhibit 1C replaces the red vertical line pointing to phasing out Speech in June-July 2019 with a text legend for descriptive consistency.
33. Amended Exhibits 4A, 5A and 6 add a text legend attributing the spike in LBRY on-chain transaction activity in July 2019 to Erikson update of LBRY desktop, as well as streamlined migration of YouTube creators and their content to LBRY platform.
34. Amended Exhibit 13 reflects a change in the description of the announcement for date 8/15/19 to a more accurate narrative “Franklin LBRY Browser Update, Security-Related LBRY Hard Fork.” Additionally, based on my original regression results, this announcement date should have been marked as “TRUE,” i.e., as a statistically significant event. This report corrects this accidental reporting error.

Respectfully submitted,



April 29, 2022

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Dr. Boris M. Richard

**Exhibit #8A – LBRY On-Chain Transaction Volume, When Excluding Transactions of LBRY-Affiliated Addresses and Strategic Partner Addresses, Significantly Exceeded LBC Secondary Market Trading Volumes in 2016 – 2021 (by LBC Count)**

<b>Year</b>	<b>On Chain Transaction Volume (a)</b>	<b>Secondary Market Trading Volume (b)</b>	<b>Difference (a-b)</b>	<b>On Chain/Trading Volume (a/b)</b>
2016	408,847,266	129,992,778	278,854,487	3.15
2017	1,008,990,013	1,906,136,580	(897,146,567)	0.53
2018	546,089,132	1,486,012,563	(939,923,431)	0.37
2019	1,231,033,289	1,408,055,812	(177,022,523)	0.87
2020	27,031,083,691	7,833,785,244	19,197,298,448	3.45
2021	24,621,703,589	16,026,785,553	8,594,918,037	1.54
Total	54,847,746,980	28,790,768,529	26,056,978,451	1.91

Sources:

-LBRY Database

-CryptoCompare.com

**Exhibit #8B – LBRY On-Chain Transaction Volume, Excluding Transactions of LBRY-Affiliated Addresses, Strategic Partner Addresses, as well as Transactions Exceeding Average Transaction Size by More Than Three Times, Significantly Exceeded LBC Secondary Market Trading Volumes in 2016-2021 (by LBC Count)**

<b>Year</b>	<b>On Chain Transaction Volume (a)</b>	<b>Secondary Market Trading Volume (b)</b>	<b>Difference (a-b)</b>	<b>On Chain/Trading Volume (a/b)</b>
2016	341,469,678	129,992,778	211,476,900	2.63
2017	934,178,925	1,906,136,580	(971,957,655)	0.49
2018	416,641,736	1,486,012,563	(1,069,370,827)	0.28
2019	1,167,975,254	1,408,055,812	(240,080,557)	0.83
2020	26,008,436,797	7,833,785,244	18,174,651,553	3.32
2021	10,919,325,326	16,026,785,553	(5,107,460,227)	0.68
Total	39,788,027,716	28,790,768,529	10,997,259,187	1.38

Sources:

- LBRY Database
- CryptoCompare.com